Amendments to the Claims:

This listing of claims will replace all prior listings of claims in the application:

Listing of claims:

1. (Currently amended) A transmitter, comprising:

an input, coupleable to receive an RF signal;

a pre-distorter, coupled to the input, that selectively adds distortion to the RF signal;

a laser that provides a light source for optical transmission;

a modulator, coupled to the laser and the pre-distorter, that modulates the light from the laser with the RF signal from the pre-distorter to produce an output for the transmitter;

wherein the distortion added by the pre-distorter is controlled to reduce distortions in the output of the transmitter generated by the modulator;

a distortion monitor, coupled to the output of the transmitter, that monitors at least one frequency of the output of the transmitter to detect distortion in the modulator output without the use of a pilot tone; and

a microprocessor, coupled to the distortion monitor, the pre-distorter, and the modulator that uses an output of the distortion monitor to selectively generate ~~at least one~~ control signals for ~~one of~~ the modulator and the pre-distorter to reduce the distortion in the output of the transmitter.

2. (Original) The transmitter of claim 1, wherein the modulator is a Mach-Zehnder modulator.

Claim 3 is cancelled.

4. (Original) The transmitter of claim 1, wherein the distortion monitor includes a first frequency monitor that monitors a first frequency for distortion products and a second frequency monitor that monitors a second, different frequency for distortion products.

5. (Previously presented) The transmitter of claim 4, wherein the first frequency monitor includes at least one filter and a mixer that select the first frequency and down convert the first frequency to the base-band signal.

6. (Original) The transmitter of claim 4, wherein the first and second frequency monitors include double balanced mixers.

7. (Previously presented) The transmitter of claim 4, wherein:

the first frequency monitor monitors first distortion products at a frequency outside an associated channel raster alignment, wherein the frequency is representative of one of odd or even order distortion; and

the second frequency monitor monitors second distortion products at a frequency outside an associated channel raster alignment, wherein the frequency is representative of one of odd or even order distortion.

8. (Original) The transmitter of claim 1, wherein the at least one control signal generated by the microprocessor comprises first and second control signals, wherein the first control signal controls a bias voltage for the pre-distorter and the second control controls a DC bias for the modulator.

9. (Original) The transmitter of claim 1, and further including a pilot tone generator that selectively adds distortion detectable at the second frequency.

10. (Currently amended) A method for controlling a non-linear device, the method comprising:

receiving an output signal of the non-linear device;

monitoring the output signal for distortion at a first selected frequency;

generating signals indicative of a level of distortion at the monitored first frequency; and

when the signal indicates excessive distortion is present in the output signal, processing the signal indicative of a level of distortion in a microprocessor to selectively generate ~~at least one~~ control signals for ~~one of~~ the non-linear device and a pre-distorter to reduce the distortion.

11. (Original) The method of claim 10, wherein receiving an output signal comprises receiving an output signal from a Mach-Zehnder modulator.

12. (Previously presented) The method of claim 10, wherein monitoring the output signal comprises monitoring the output signal for distortions at a frequency outside a channel raster alignment, wherein the frequency is representative of one of odd or even order distortion.

13. (Original) The method of claim 10, wherein monitoring the output signal comprises:

filtering the output signal to isolate one of the first and second selected frequencies;

down converting the signal at the selected frequency to create a base-band signal;

filtering the base-band signal;

rectifying the base-band signal with a full wave rectifier to produce a rectified signal; and

filtering and amplifying the rectified signal to produce a measure of the distortion of the output signal of the non-linear device.

14. (Original) The method of claim 10, wherein generating at least one control signal comprises selectively generating a control signal to set the DC bias of the non-linear device and a control signal to establish a bias voltage for the pre-distorter.

15. (Original) A control circuit for dynamic distortion control in an optical transmitter, the control circuit comprising:

a photo diode coupleable to receive an optical output signal from a modulator of the transmitter and providing an electrical output;

a first frequency monitor, coupled to the electrical output of the photodiode, the first frequency monitor comprising:

a filter that includes a first frequency in its frequency band,

an amplifier coupled to the filter,

a first mixer, coupled to the amplifier to down-convert the first frequency to base-band;

a full-wave rectifier coupled to the output of the first mixer, and

a log amplifier coupled to the full-wave rectifier that outputs a first signal indicative of the level of the distortion at the first frequency without the use of a pilot tone;

a second frequency monitor, coupled to the electrical output of the photodiode, the first frequency monitor comprising:

a filter that includes a second frequency in its frequency band,

an amplifier coupled to the filter,

a notch filter coupled to the amplifier,

a second mixer, coupled to the amplifier to down-convert the second frequency to base-band;

a full-wave rectifier coupled to the output of the second mixer, and

a log amplifier coupled to the full-wave rectifier that outputs a second signal indicative of the level of the distortion at the second frequency; and

a controller, coupled the first and second frequency monitors to receive the first and second signals and to selectively create at least one control signal for one of the modulator and a pre-distorter.

16. (Currently amended) A transmission system, comprising:

at least one optical transmitter with an input coupleable to receive input data and providing at least one optical output;

at least one optical link coupled to each of the at least one optical output;

an optical receiver coupled to each of the at least one optical link;

the optical transmitter including an optical modulator and a pre-distorter circuit, wherein the pre-distorter generates distortions to reduce distortions in the output of the optical transmitter; and

a control circuit for dynamic distortion control in the optical transmitter, the control circuit comprising:

an input coupleable to receive a signal from the optical modulator of the transmitter;

a first frequency monitor, coupled to the input, that monitors the level of distortion at a first frequency and that creates a first signal indicative of the level of the distortion without the use of a pilot tone; and

a controller, coupled to the first frequency monitor to receive the first signal and to selectively create ~~at least one~~ control signals for ~~one of~~ the modulator and the pre-distorter.

17. (Original) The system of claim 16, wherein the first frequency monitor includes at least one filter and a mixer that select the first frequency and down convert the frequency to base-band.

18. (Original) The system of claim 16, and further including a second frequency monitor, coupled to the input, that monitors the level of distortion at a second frequency and that creates a second signal indicative of the level of the distortion.

19. (Original) The system of claim 18, wherein the first and second frequency monitors include double balanced mixers.

20. (Previously presented) The system of claim 18, wherein:

the first frequency monitor monitors first distortion products at a frequency outside an associated channel raster alignment, wherein the frequency is representative of one of odd or even order distortion; and

the second frequency monitor monitors second distortion products at a frequency outside an associated channel raster alignment, wherein the frequency is representative of one of odd or even order distortion.

21. (Original) The system of claim 16, wherein the controller generates first and second control signals, wherein the first control signal controls a bias voltage for the pre-distorter and the second control controls a DC bias for the optical modulator.

22. (Original) The system of claim 16, and further including a pilot tone generator that selectively adds distortion detectable at the second frequency.